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Many Federal, State, and private drawbridges or locks are operated 24 hours a day despite little or no boat traffic during predictable periods. The U.S. Coast Guard regulates operations of drawbridges along navigable waterways, and the Army Corps of Engineers operates and maintains some inland waterway routes and owns and operates some bridges and locks. In many instances the cost to maintain unobstructed navigation at all time is enormous, and considerable savings could be realized with little impact on navigation if such services were reduced or eliminated. Findings/Conclusions: Reducing drawbridge operations when justified by traffic patterns could save millions of dollars. In Florida, Georgia, North Carolina, South Carolina, and Virginia, 52% of the bridges analyzed were manned 24-hours a day, although 45% had less than one boat in an 8-hour period. The costs and other maintenance problems associated with the Dismal Swamp Canal outweigh its benefits. The current annual cost of keeping the canal open is \$435,000. Recommendations: The Secretary of the Army should direct the Corps of Engineers to: analyze vessel usage of its bridges and locks, consult with users as to their ability to adjust to new operating hours, consider various alternatives for reducing hours and costs, and request Coast Guard approval for adjusting operations where the savings from reducing such operations are more than the benefits of operating continually. The Corps of Engineers should also: determine whether States or local communities would assume the costs to maintain the Dismal Swamp Canal for through navigation, hold meetings to obtain public views regarding closure of the canal, and determine the environmental impacts of such closure. The Secretary of Transportation should require the Coast Guard to develop and disseminate to drawbridge owners criteria for

evaluating requests for reducing bridge operating hours during periods of low vessel usage. (Author/SC)

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REPORT TO THE CONGRESS

04528



*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

Opportunities For Large Savings By Altering Some Inland Waterway Operations

Many Federal, State, and private drawbridges or locks are operated 24 hours a day despite little or no boat traffic during predictable periods. Operations could be greatly reduced without having a serious impact on essential navigation needs, simultaneously saving millions of dollars each year. Further, the Army Corps of Engineers' operation of the Dismal Swamp Canal--an expensive alternate route to the main route of the Atlantic Intracoastal Waterway--appears unwarranted.



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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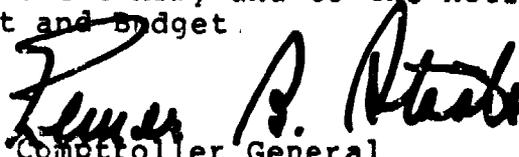
The President of the Senate and the
Speaker of the House of Representatives

This report discusses (1) the operation of drawbridges and locks on the Nation's inland waterways during hours of limited waterway traffic and (2) the use of the Dismal Swamp Canal as a through navigation route.

We made our review to demonstrate the potential for savings to the taxpayers through reducing or eliminating operations on waterways with limited vessel usage while providing for the reasonable needs of navigation. The information in this report may be useful to the Congress in considering a balanced national transportation policy and waterway user charge legislation.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Secretaries of Defense, Transportation, and the Army and to the Acting Director, Office of Management and Budget.


Comptroller General
of the United States

D I G E S T

There are many drawbridges and locks on the Nation's navigable waterways which are being operated needlessly 24 hours a day, 7 days a week. The U.S. Coast Guard regulates operations of drawbridges along navigable waterways, and the Army Corps of Engineers operates and maintains some inland waterway routes and owns and operates some bridges and locks. In many instances the cost to maintain unobstructed navigation at all times is enormous, and considerable savings could be realized with little impact on navigation if such services were reduced or eliminated.

A century or so ago, waterways were the Nation's primary transportation system. Precedents were set then that unobstructed use of waterways was a paramount objective for commercial and military use. In the ensuing decades, although land transportation was developed and bridges and other structures were built, the precedents remained that drawbridges and locks should open on signal from any water vessel. (See pp. 1 and 2.)

This explains, in part, why the Coast Guard is required by legislation and case law to provide for the reasonable needs of navigation. In some cases the Coast Guard reduced drawbridge operating hours when low vessel usage or other factors indicated it was in the public interest. However, there are other opportunities where operating hours may be reduced with little impact on navigation. For example, the Edison Bridge in Florida averaged only 0.2 recreational craft and no commercial craft between 10 p.m. and 6 a.m. during 1976.

Consideration should be given to costs incurred and benefits obtained, as well as the other criteria, in deciding whether the public interest is being served by operating drawbridges and locks 24 hours a day, 7 days a week, on waterways having periods of low vessel usage. (See pp. 5 and 6.)

If consideration were given to these factors in establishing operating procedures for drawbridges and locks, reduced operations would be allowed where there is limited waterway use and millions of dollars annually would be saved to taxpayers and others.

The number and location of drawbridges did not permit GAO analysis to be in sufficient depth to project nationwide savings on bridge operating costs resulting from reduced waterways operations. Because of the varying operating circumstances of bridges and the lack of readily available statistical information, exacting projections would require a bridge-by-bridge analysis.

However, reducing drawbridge operations where traffic patterns justify could save millions of dollars to Federal, State, local, and private bridge owners. GAO's analysis--in Florida, Georgia, North Carolina, South Carolina, and Virginia--showed that 62 percent of the selected bridges were manned 24 hours a day and that 45 percent had less than one boat during an 8-hour period. Using this data, GAO estimates that savings of about \$4 million are possible in the Atlantic coast States.

Although the potential national savings cannot be estimated, some of the other 997 bridges may have periods of low vessel usage where savings are possible. The concept of allowing these bridges to reduce hours during these low usage periods should be applicable.

In the case of the Dismal Swamp Canal, an alternate route along the Atlantic Intracoastal Waterway, its costs and other disadvantages of maintenance as a through waterway outweigh its benefits. There are few significant negative impacts that would result from its closure. No commercial tonnage is transported on the canal, although some companies use it periodically for transporting empty barges. The Corps of Engineers' annual operation and maintenance expenses to keep the canal open averaged \$575,000 for the last 3 years, an average of \$185 for each boat that used it. Because of reductions in operations, the current annual cost is about \$435,000. (See p. 25.)

The Corps and North Carolina may need to spend \$28.6 million to construct two high-level bridges across the 50-foot-wide canal. Closure to through navigation would permit the construction of low-level, fixed-span bridges at a total cost of only \$1.2 million. (See p. 27.)

RECOMMENDATIONS

The Secretary of the Army should direct the Corps of Engineers to (1) analyze vessel usage of its bridges and locks, (2) consult with users as to their ability to adjust to new operating hours, (3) consider various alternatives for reducing hours and costs, and (4) request Coast Guard approval for adjusting operations where the savings from reducing such operations are more than the benefits of operating continually. (See pp. 16 and 17.)

He should also direct the Corps of Engineers to (1) determine whether States or local communities would assume the costs to maintain the Dismal Swamp Canal for through navigation, (2) hold meetings to obtain public views regarding the closure of the canal, and (3) determine the environmental impacts of such closure. Unless the results of these determinations clearly justify a different action, the Secretary should direct the Corps to develop a legislative proposal to close the Dismal Swamp Canal to through navigation. (See pp. 29 and 30.)

The Secretary of Transportation should require the Coast Guard to develop and disseminate to drawbridge owners, by publication in the Federal Register or other suitable means, criteria for evaluating requests for reducing bridge operating hours during periods of low vessel usage. These criteria should give recognition to (1) the amount of waterway traffic for expected periods of closure, (2) the ability of vessel operators to adapt to changed operations, and (3) the cost beneficial aspects of keeping bridges operating continually. (See p. 18.)

AGENCY COMMENTS

The Army agreed that reducing costs by lessening hours of operation of locks and bridges was desirable and said that Corps districts were taking steps to reduce hours of operation during low-demand periods. (See p. 17.) It agreed also that

reducing costs by closing lightly used waterways was desirable.

The Department of Transportation said that there might be some bridges operating 24 hours a day when there was insufficient navigation to economically justify the labor costs and that there might be owners who were not aware that regulations might be promulgated to reduce operations. The Department did not agree that the actions recommended above are necessary because the Coast Guard does not believe the determination of reasonable needs of navigation is amenable to quantitative criteria. (See pp. 17 and 18.)

GAO's position remains unchanged--namely that reducing hours at drawbridges because of low usage by ships can save taxpayers and others large amounts of money while meeting essential navigation needs. The recommended criteria should be considered in establishing operating rules, and each drawbridge owner should be aware of the criteria.

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ABBREVIATIONS

AIWW	Atlantic Intracoastal Waterway
GAO	General Accounting Office

CHAPTER I

INTRODUCTION

The Corps of Engineers, Department of the Army, spent \$146 million to operate and maintain the Nation's inland waterways for fiscal year 1976. Operating costs principally include salaries, fringe benefits, and overhead expenses, and maintenance costs consist of general repair and dredging activities. These costs do not include amortization of the large capital investment expended by the Corps of Engineers in digging canals and building or replacing locks, dams, and other facilities. Amortization of these other navigational costs could run into additional hundreds of millions of dollars each year. In addition, large costs are incurred by States, local governments, and private interests.

The need to build dams and locks to navigate inland waterways results because, in their natural state, the rivers can be navigable only near their outfall to the sea, where the water has enough depth, negligible slope, and minimal velocity. Inland reaches of rivers, however, are often characterized by narrower winding courses, progressively steeper water slopes, and higher velocities. In such reaches, dams must be built to create pools to obtain enough water depths, flatten the slopes, and slow the velocity. Locks, or chambers, must be built permitting the vessels to pass through the dam location while maintaining the upstream and downstream water elevations almost unchanged.

INLAND NAVIGATION

Navigation in inland waterways has been an important part of the national transportation system. Regulated inland waterways began early in the 1800s when the paramount objectives of providing federally assisted transportation were to encourage settlement and economic development of the Nation's undeveloped reaches. Since then surface transportation modes have changed due to the growth of the railroad, automotive, and trucking industries. Many legal precedents favoring waterway transportation and dating back to the Northwest Ordinance of 1787 are still being followed.

Federal interest in navigation originated from the commerce clause of the Constitution and from decisions of the Supreme Court that Federal obligations to regulate navigation and commerce included the right, but not the obligation, to make necessary improvements. These improvements are

made principally by congressional authorization for financing river and harbor projects which assist in the development, safety, and conduct of waterborne commerce and recreational boating. Such projects provide for widening and deepening waterways so that ships and other watercraft can be safely and expeditiously accommodated while providing a means of cargo transportation.

The waterway system that evolved through the years was designed to promote navigation and placed little emphasis on land transportation needs. As a result, bridges across the waterways were required by existing laws and regulations to be operated and maintained so as to not unreasonably interfere with water traffic. This practice reportedly has resulted in long lines of cars and trucks waiting for vessels to pass through drawbridges, thereby wasting energy.

Though most bridges are owned and operated by non-Federal interests, such as States and local communities, the Federal Government owns 20 drawbridges in Atlantic coast States and the District of Columbia.

Since 1824 the Corps has been responsible for planning, constructing, operating, and maintaining the inland waterways system. Before 1967 the Corps governed and regulated all drawbridges and locks on or over navigable waters. However, the Department of Transportation Act of 1966 (49 U.S.C. 1651) established the Department of Transportation and transferred to it the responsibilities for regulating drawbridges. Following the transfer, the Secretary of Transportation gave the Coast Guard the responsibility for regulating drawbridges over navigable waters; the Corps retained its responsibility for regulating locks.

The legal requirement that bridges be constructed and operated in a manner that does not obstruct waterways originated with the Northwest Ordinance of 1787, which provided that navigable waters be used as common highways and forever free of any tax, import, or duty to U.S. citizens. Courts interpreted this to mean "free of unreasonable obstructions," such as low-level, fixed-span bridges.

INTRACOASTAL WATERWAYS

The original legislation referring to a continuous intracoastal waterway was the River and Harbor Act of 1909 (Public Law 60-317, Mar. 3, 1909) which provided for surveys for the construction of the Atlantic and Gulf intracoastal waterway

systems for commercial, naval, or military purposes. In 1932 the Congress expanded the definition of "commerce" (33 U.S.C. 541) to include pleasure craft as a basis for modifying waterways. Overall, the Atlantic intracoastal waterway system is used principally by recreational boaters and yachtsmen, who seasonally migrate between Northeastern States and Florida, whereas commercial barge traffic predominates the Gulf Intracoastal Waterway, between western Florida and the Mexican border.

The Atlantic intracoastal waterway system, the principal waterway examined by us and discussed in this report, makes up an inland sea-level route through coastal sounds, canals, rivers, harbors, and bays paralleling the Atlantic coast from Boston, Massachusetts, to the St. John River, Florida. This waterway has an authorized depth of 12 feet and a bottom width varying from 90 feet in landcuts to 300 feet in open waters. It provides a sheltered north-south route for shallow-draft vessels and influences commerce, industry, land use, and recreation.

A map of the intracoastal waterway sections and principal connecting inland waterways follows.



**THE INTRACOASTAL WATERWAY
AND
PRINCIPAL CONNECTING INLAND WATERWAYS**

LEGEND

-  IMPROVED INTRACOASTAL WATERWAY
-  OPEN BAY WATER
-  AUTHORIZED FOR IMPROVEMENT
-  PRINCIPAL IMPROVED CONNECTING WATERWAYS

CHAPTER 2

DRAWBRIDGE AND LOCK OPERATING HOURS COULD BE REDUCED

AT CONSIDERABLE SAVINGS WITHOUT SIGNIFICANT NEGATIVE IMPACTS

The Coast Guard estimates that there are 1,855 drawbridges in the United States. Our analysis of vessel traffic at selected drawbridges and locks in the Southeastern United States shows that many are operated 24 hours a day, 7 days a week, even though marine traffic is extremely limited during night-time hours and other periods. Coast Guard officials told us that there had been cases in which operating hours were shortened because the amount of navigation traffic did not justify having the bridges open on signal. But this has not been the general practice because the Coast Guard strongly supports the paramount right of navigation on the navigable waters of the United States based on the mandates in 33 U.S.C. 499 and case law.

Reducing drawbridge and lock operating hours during periods of low vessel usage could save millions of dollars annually to the bridge and lock owners--Federal Government, States, railroads, counties, and cities. Other alternatives to closure during certain periods are available for reducing costs and for accommodating the vessels, such as requiring vessel owners to notify bridge operators in advance of the desired time of opening.

COAST GUARD AND CORPS RESPONSIBILITIES FOR REGULATING HOURS

The Department of Transportation, through the Coast Guard, has responsibility under 33 U.S.C. 499 to insure that bridges across navigable waters do not constitute or become unreasonable obstructions to waterway traffic and that drawbridges are operated under such rules and regulations as are in the public interest. The Coast Guard stated that operational regulations had been issued for about 53 percent of the drawbridges in the United States. The Coast Guard Bridge Administration Manual provides that, in the absence of specific operational regulations, a drawbridge must open promptly on signal from a water vessel at all times.

The manual provides that the Coast Guard establish, revise, amend, or revoke regulations for the operation of drawbridges as economic growth takes place; as physical characteristics and use of waterways change; or as public

interest, health, or safety may require. According to the manual, interested parties may request a temporary or permanent change in the manner in which a drawbridge is operated. The manual provides for specifying operating regulations that may include

- closed periods where vehicular traffic is an important factor,
- opening of drawbridges on advance notice where waterway traffic requirements are limited, and
- other regulations necessary to meet a variety of specific needs.

The Coast Guard is the only agency with authority to regulate drawbridge operations. It has no authority, however, to regulate the operating hours of locks. The locks included in our review are owned and operated by the Corps.

The Coast Guard could not readily estimate the number of bridges that were manned 24 hours a day. About 47 percent are not regulated, they said, and thus are required to open on signal 24 hours a day. One official said that there were many others which were closed for only brief periods, such as during rush hours, and were manned 24 hours. Our tests showed that 62 percent of the 29 drawbridges we selected for review were manned 24 hours.

Before considering changes in the operating hours for a drawbridge, the Coast Guard requires a request which includes information on the problem, the proposed solution, vehicular and waterway traffic counts, and an environmental analysis if appropriate. The manual requires that, for each request, the Coast Guard considers bridge clearances, vehicular and waterway traffic flow, and economic development in deciding changes in operating hours. But Coast Guard officials said they did not consider bridge operating costs in evaluating requests.

COST ARE HIGH FOR THE BRIDGE OWNERS
TO OPERATE 24 HOURS A DAY

Coast Guard reports for the 16 Atlantic coast States and the District of Columbia show drawbridge ownership as follows:

<u>Owner</u>	<u>Number of drawbridges</u>	<u>Percent</u>
Federal Government	20	2.4
States	363	42.3
Railroads	207	24.1
Other (note a)	<u>268</u>	<u>31.2</u>
	<u>858</u>	<u>100</u>

a/Primarily counties and cities.

We contacted several State governments, the Corps of Engineers, and a railroad to determine which of their bridges were manned 24 hours a day and to obtain estimates of annual operating costs. The number and estimated costs of such bridges are shown below.

<u>Owner</u>	<u>Total drawbridges</u>	<u>Number</u>	<u>Operated 24 hours a day</u>	
			<u>Annual operating cost</u>	<u>Average annual operation cost per bridge (note a)</u>
			(000 omitted)	
Federal Government	14	12	\$1,722	\$85
States:				
Virginia	20	10	430	43
N.C.	26	22	1,122	51
S.C.	20	13	520	40
Georgia	6	3	126	42
Florida	133	111	6,098	55
Railroad	<u>42</u>	<u>6</u>	<u>456</u>	76
	<u>261</u>	<u>177</u>	<u>\$9,774</u>	55

a/These are variable operating costs and do not include maintenance costs.

An average of about \$55,000 annually is required to operate each drawbridge 24 hours a day, 7 days a week.

ANALYSIS OF VESSEL TRAFFIC AT SELECTED BRIDGES
INDICATES LOW USAGE DURING CERTAIN PERIODS

We analyzed the vessel traffic at 29 bridges to determine whether the traffic appeared to warrant full 24-hour operation. The bridges we selected are not necessarily representative of all bridges in the Nation, but, in our opinion, they do show that many bridges are being manned and

operated during certain periods at great expense for the benefit of only a few vessels.

In selecting bridges for analysis, we chose:

- All eight North Carolina State-owned bridges spanning the Atlantic Intracoastal Waterway (AIWW).
- All seven Corps-owned bridges along AIWW.
- A sample of Florida-owned bridges, including three with high vessel use, four with medium vessel use, and three with low vessel use.
- Four Virginia-owned bridges near the Norfolk area.

We used statistical sampling techniques for computing the timing of vessel traffic and identified commercial and recreational use. Appendix I shows, for each bridge selected, the average daily commercial and recreational waterway traffic for the latest 12 months for which data was available. The average daily vessel traffic at the 29 bridges ranged from 0.7 to 51.7 a day. Appendix I also shows the vessel traffic during the 12-hour period 3 p.m. to 6 a.m. and the 8-hour period 10 p.m. to 6 a.m. (these were generally the slackest 12- and 8-hour periods). The average use of these bridges during the 8- and 12-hour periods was as follows:

Average number of vessels	Number of bridges	
	<u>slack 12-hour period</u>	<u>slack 8-hour period</u>
Less than one	5	13
1 to 2	4	11
2 to 3	3	4
3 to 4	2	1
4 to 5	3	0
5 to 12	<u>4</u>	<u>0</u>
	a/ <u>21</u>	<u>19</u>

a/Data not provided for the slack 12-hour-period for eight North Carolina bridges.

From information shown in the table, we computed that 97 percent of the bridges averaged less than 3 vessels in the slack 8-hour period. Examples of low-use bridges are discussed below.

--The Edison Bridge, Florida, averaged 4.4 vessels each day during 1976. The vessels included 4.3 recreational craft and 0.1 commercial craft. Openings between 10 p.m. and 6 a.m. averaged 0.2 recreational craft and no commercial craft. Therefore, on the average, the bridge opens once every 5 days during the late night shift for a pleasure craft. Estimated annual cost to operate one shift is \$18,300, or \$250 a boat for a 10 p.m. to 6 a.m. shift.

--Virginia's 60-foot-high York River Bridge opened an average 0.73 times a day during 1976. During the hours of 6 p.m. to 6 a.m., it opened, on the average, once every 33 days. During the hours of 10 p.m. to 6 a.m., it averaged 0.02 openings, or about once every 50 days. Statistics were not available to compare commercial and pleasure craft; however, Virginia officials said that most of the traffic which required the bridge to open was commercial or military--seemingly the type that could give advance notice. Cost to operate the bridge is about \$43,000 a year, or about \$2,000 a vessel for the 8-hour period between 10 p.m. and 6 a.m.

--As indicated in appendix I, use of the 7 Corps bridges was fairly consistent with about 23 vessels a day, about 4 from 6 p.m. to 6 a.m., and about 2 between 10 p.m. and 6 a.m. Each bridge costs about \$85,000 a year to operate 24 hours a day, an average of \$46 a vessel during the 8-hour period between 10 p.m. and 6 a.m.

LOCK OPERATIONS INDICATE LOW USAGE DURING CERTAIN PERIODS

The Corps' Norfolk and Wilmington Districts have six locks, which, in total, cost about \$890,000 annually to operate and maintain. Like drawbridges, these locks' high cost and limited boat use during certain hours indicate the potential for reduced operating hours, with large savings.

Great Bridge Lock

The Corps' Norfolk District owns and operates the Great Bridge Lock 24 hours a day, 7 days a week. According to Corps records, an average 39.5 boats use the lock each day, 7.3 during the slackest 12 hours and 3.9 during the slackest 8 hours. For the slackest 8-hour period the cost for each boat averages about \$43. Savings of \$60,000 to \$90,000 annually could result through reductions of 8 to 12 hours in daily operations.

The graph on page 11 illustrates, for the 11-month period of January through November 1976, the average timing of lock traffic. This predictable timing pattern could serve as a basis for adjusting hours with the least impact. For example, this graph shows that most of the waterway traffic is during daylight hours.

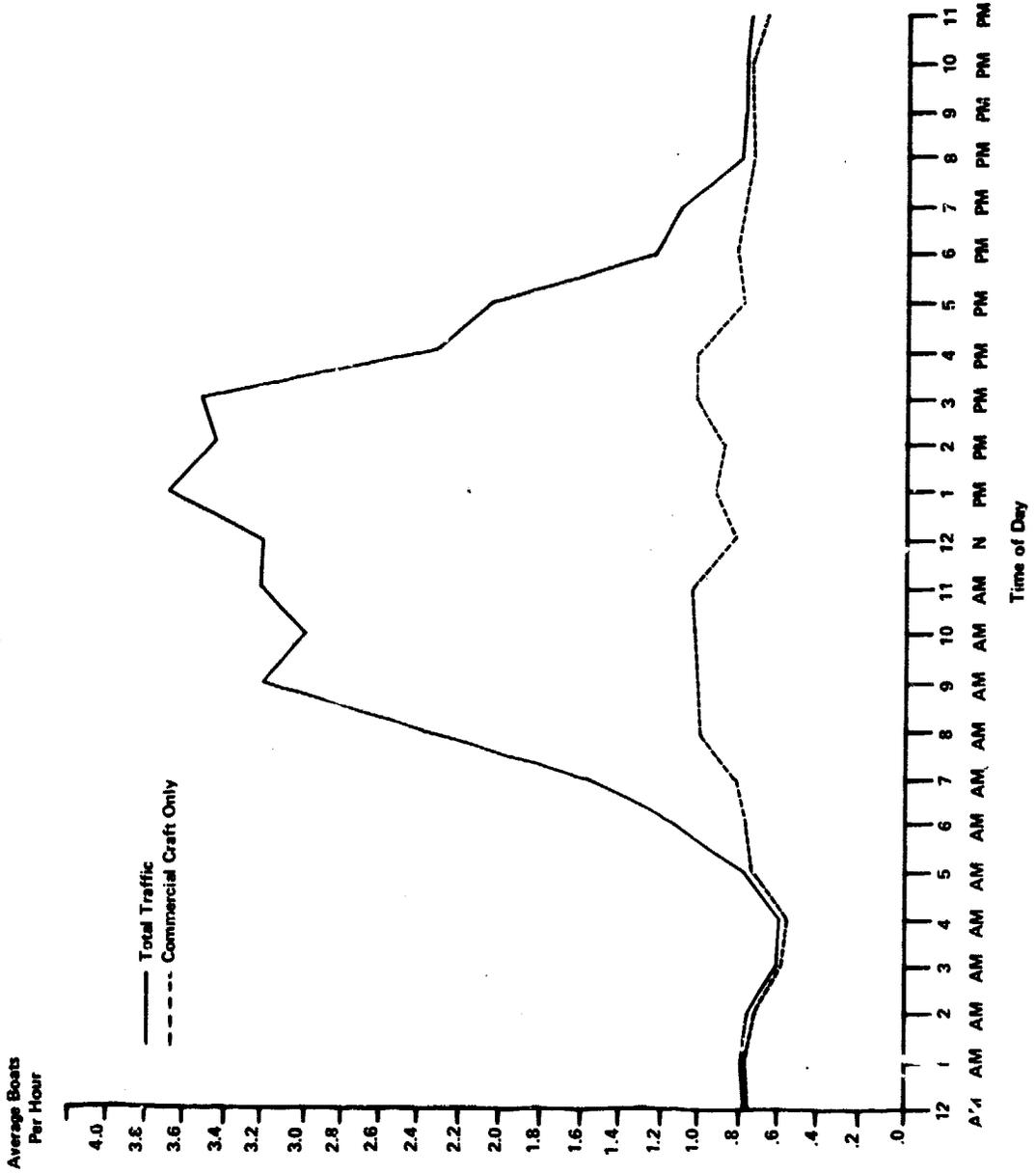
The Department of the Army stated in an October 12, 1977, letter that the Norfolk District was preparing an assessment of the effect of reduction of hours at Great Bridge.

Cape Fear River Locks

The Wilmington District spends about \$530,000 annually to operate and maintain the Cape Fear River Above Wilmington project. These costs are mainly for operators' salaries to operate three boat locks and to dredge river segments. From June 1955 to November 1976, the locks and dams had been available for navigation 24 hours a day, 7 days a week. Eight hours of this time plus weekends are considered standby or callback duty. During these hours, an operator had to be at his residence located on the lock premises, in the event a boat required lockage.

The latest justification report for the Cape Fear project was issued by the district in 1969. The report cited an annual average of 1,622 boat trips through the locks. Since then vessel trips through the locks have decreased. From October 1, 1975, through September 30, 1976, usage totaled only 817 boat trips, or about 50-percent reduction as shown on page 12.

Vessel Usage of Great Bridge Lock
January Through November 1976



	<u>Lockages per 1969 report</u>	<u>Lockage Oct. 1, 1975-Sept. 30, 1976</u>	<u>Decrease since 1969</u> (percent)
Lock number 1	1,033	445	56.9
Lock number 2	939	439	53.2
Lock number 3	350	226	35.4

Only 216 different commercial and pleasure boats used the locks during the 12-month period ended September 30, 1976. The cost in lock operators' salaries averaged about \$700 a boat. A further example of limited use is shown by the fact that during the month of January 1976, only one boat used lock number 3, which costs \$4,200 a month for operator's salaries. About 95 percent of the boats using this lock are pleasure craft. Locks number 1 and number 2 are used primarily by commercial craft, as summarized below for the 12-month period ended September 30, 1976.

<u>User</u>	<u>Total trips for 12 months (note a)</u>	<u>Percent to total</u>	<u>Average daily trips</u>
Commercial:			
Company number 1	262	43.8	.7
Company number 2	48	8.0	.1
Company number 3	37	6.2	.1
Others	<u>26</u>	<u>4.4</u>	<u>.1</u>
Total	373	62.4	1.0
Recreational	<u>225</u>	<u>37.6</u>	<u>.6</u>
Total	<u>598</u>	<u>100.0</u>	<u>1.6</u>

a/Each trip includes a lockage through lock number 1, lock number 2, or both.

After we started our review, the Wilmington District also analyzed lock usage data and concluded that decreases in navigational use, coupled with high operating costs, made full 24-hour operation uneconomical. Thus, in December 1976, operating hours were reduced and will primarily accommodate daytime users, which should save about \$75,000 yearly in operating costs. Other alternatives, such as requiring boaters to furnish advance notice during certain hours or months of the year, might save even more.

The Army stated in an October 12, 1977, letter that the district was reviewing operations of the Cape Fear River Locks and was making plans to further reduce the hours of operation.

BRIDGE AND COMMERCIAL BOAT OWNERS'
VIEWS ON REDUCED OPERATING HOURS

Bridge owners we talked to were in favor of reducing operating hours. Vessel owners, however, had an opposite view.

Corps officials expected user opposition to efforts to reduce operating hours. Corps officials believe that reduced operating hours are generally feasible and could be better demonstrated if the Corps presented good usage data to the Coast Guard and by mutually working with commercial users to accommodate their needs.

Also, Norfolk Corps officials have stated that they are analyzing bridge and lock usage on the entire Albemarle and Chesapeake Canal with a view toward reducing operations to 16 hours. Wilmington Corps officials plan to replace five drawbridges in the next 6 years with high-level, fixed-span bridges. Therefore shift reductions will only be an interim savings in bridge operating costs. A Corps official also suggested that tieup facilities might have to be installed at certain closed bridges.

State governments own the largest number of drawbridges in Atlantic coast States and stand to gain the most through reduced operations. We contacted State officials in five Atlantic coast States to obtain their views on the potential for reducing drawbridge operating hours on waterways with low vessel usage. These officials favored reducing the hours of operation during such periods. However, at many of the regulated drawbridges, operating hours have been reduced for brief periods, such as during rush hour, and little, if any, savings are realized. The Coast Guard will not allow changed operating hours, these officials said, if only a few complaints are received. Officials from one State said that the Coast Guard's attitude provides a strong disincentive for trying to change current drawbridge operations. State officials said that consequently, they had not requested reduction of operating hours for many bridges with low vessel usage because of the Coast Guard's reluctance to approve the request.

Also Florida is considering the installation of remote-controlled bridges to reduce operating costs. However, the payback period to recoup the installation costs is about 9 years.

A total of 207 drawbridges that cross the inland waterways from Maine to Florida are owned and maintained by the railroad industry. We contacted one company that owned 42 of the bridges and were told that 6 were manned 24 hours a day. The remaining 36 bridges are opened on advance notice, or manned part time and left open when not being used by trains. Even so, railroad officials favored any plan to reduce operations further and decrease operating costs totaling \$456,000 annually for the six bridges.

We discussed the impact of reducing drawbridge operations with two tugboat companies that used the AIWW. Both opposed any reduction; they believed it would create delays, cause scheduling problems, and increase expenses. They believed bridges should be open 24 hours a day regardless of low vessel use. We found that, in a later analysis of a 6-month period, one of the two companies had made no use of the bridges at night.

ALTERNATIVES TO OPERATING 24 HOURS A DAY
THAT WILL REDUCE HOURS/COSTS AND STILL MEET
THE REASONABLE NEEDS OF NAVIGATION

Our work was directed primarily toward the potential for reducing daily operating hours of bridges and locks for waterways with low vessel usage. As noted in our analyses, a few vessels were using facilities during the late night shifts. A few of the boaters may only have to wait or adjust their schedule for a few minutes, whereas others may have to wait or adjust their schedules up to 4 hours for an 8-hour closure. If it is not possible to eliminate daily shifts, other alternatives are available for bridges and locks which may accommodate boaters and/or reduce costs, as discussed below.

- Adjusting hours based on seasonal demands. This could include partial or complete closure during, for example, winter months in some areas. This concept is now in use on the Cape Fear River Locks.
- Adjusting operations to different day-of-week demand. For instance, bridges with predominant commercial use might not need to operate on weekends and bridges with predominant recreational use may not need to

operate for as many hours during the week as on weekends. This concept is now used on the Cape Fear River Locks.

- Advance notice. This alternative has been approved by the Coast Guard for some drawbridges with infrequent openings. However, it could apply to any bridge or lock with predictable periods of low use.
- Remote control. Florida is considering remote control for a group of bridges, but payback periods appear lengthy.
- Assessment of user charges. The Army said that user fees for the limited pleasure vessel usage would be exorbitant if operation and maintenance costs were to be covered.
- Combinations of alternatives, such as advance notice for some periods, closure for other periods.

With all these alternatives and opportunities available to reduce hours/costs on waterways with low vessel usage, there is a need to consider (1) the extent to which an alternative on one bridge or lock would affect others on a waterway, (2) the ability of users to adjust, and (3) the reasonableness as to what price bridge and lock owners (mostly taxpayers) must pay for the convenience of a few watercraft (costs versus benefits).

ESTIMATE OF NATIONAL SAVINGS POTENTIAL

The number and location of drawbridges did not permit our analysis to be in sufficient depth to project nationwide savings on bridge operating costs resulting from reduced waterway operations. Because of the varying operating circumstances of bridges and the lack of readily available statistical information, exacting projections would require a bridge-by-bridge analysis.

We believe that reducing drawbridge operations where traffic patterns justify could save millions of dollars to the Federal, State, local, and private bridge owners. Our analysis in five Atlantic coast States showed that 62 percent of the selected bridges were manned 24 hours a day and that 45 percent had less than one boat during an

8-hour period. Using this data, we estimate that savings of about \$4 million are possible in the Atlantic coast States. 1/

Although we cannot estimate the potential national savings, some of the other 997 bridges may have periods of low vessel usage where savings are possible. The concept of allowing these bridges to reduce hours during these low usage periods should be applicable.

CONCLUSIONS

There are many drawbridges and locks which are needlessly being operated 24 hours a day, 7 days a week. In many instances the cost for each vessel crossing is enormous to maintain unobstructed navigation at all times.

Legislation and case law requires the Coast Guard to provide for the reasonable needs of navigation. In some cases the Coast Guard has reduced drawbridge operating hours when low vessel usage or other factors indicates it to be in the public interest. However, there are other opportunities where operating hours may be reduced with little impact on navigation.

Consideration should be given to costs incurred and benefits obtained, as well as the other criteria mentioned on pages 14 and 15, in deciding whether the public interest is being served by operating drawbridges and locks 24 hours a day, 7 days a week, on waterways having periods of low vessel usage. If consideration were given to these factors in establishing operating procedures for drawbridges and locks, reduced operations would be allowed where there is limited waterway usage and millions of dollars annually would be saved the taxpayers and others.

RECOMMENDATIONS

We recommend that the Secretary of the Army direct the Corps of Engineers to (1) analyze vessel usage of its bridges and locks, (2) consult with users as to their ability to adjust to new operating hours, (3) consider various alternatives for reducing hours and costs, and (4) request Coast

1/858 bridges x 62 percent manned 24 hours x 45 percent with less than one boat during an 8-hour period x (\$55,000 divided by 3) = \$4.4 million.

Guard approval for adjusting operations where the savings from reducing such operations are more than the benefits of operating continually.

AGENCY COMMENTS

In an October 12, 1977, letter (see app. II), the Army said that the goal of reducing costs by lessening hours of operations of locks and bridges was desirable and that Corps districts had already taken steps to implement our recommendation. The Army said that any widespread reduction in service must first be analyzed carefully in each case and that that this analysis should be well-documented. We agree.

In a September 20, 1977, letter (see app. III), the Department of Transportation said that the Coast Guard agreed that there might be some bridges whose owners operated 24 hours a day when there was insufficient navigation to economically justify the labor costs. The Coast Guard also agreed, the Department said, that there might be situations where the owners might not be aware that regulations might be promulgated to relieve the owners of part or all of the legal burden to open the bridge on reasonable signal.

The Department stated, however, that no corrective action was contemplated, as GAO proposed, to develop additional criteria that would be used in evaluating requests for reducing bridge operating hours. Also the determination of the reasonable needs of navigation is not amenable to quantitative criteria of (1) amounts of traffic, (2) the ability of navigation to change operations, or (3) the cost benefits or savings to drawbridge owners.

The Department said that it was, at the very least, most improper and inappropriate for the Coast Guard to actively seek ways and means to reduce drawbridge operating hours and restrict navigation to lesser availability of the waterway on the basis of economic benefit to drawbridge owners and land transportation. We agree that it is not the duty of the Coast Guard to actively seek ways to reduce drawbridge operating hours and restrict navigation, but it is the Coast Guard's duty to establish and publish criteria that will be used in setting regulations that the public interest requires. Costs to the taxpayers can be reduced, and the needs of both land and navigation transportation can be met by reducing daily operating hours of drawbridges and locks or by adopting one or more of the other alternatives on pages 14 and 15 for waterways having periods of low vessel usage.

Public interest can be served while providing for the reasonable needs of navigation by considering the amounts of waterway traffic during certain periods, the ability of vessel operators to adapt to changed operating hours, and the costs of keeping bridges open during low vessel usage. These factors should be considered in establishing drawbridge operating rules, and each bridge owner should be aware of them.

We recommend, therefore, that the Secretary of Transportation require the Coast Guard to develop and disseminate to drawbridge owners, by publication in the Federal Register or other suitable means, criteria for evaluating requests for reducing bridge operating hours during periods of low vessel usage. Such criteria should give recognition to (1) the amount of waterway traffic for expected periods of closure, (2) the ability of vessel operators to adapt to changed operations, and (3) the cost beneficial aspects of keeping bridges operating continually.

CHAPTER 3

QUESTIONABLE NEED FOR MAINTAINING

THE DISMAL SWAMP CANAL AS A NAVIGABLE WATERWAY

Maintaining the Dismal Swamp Canal, an alternate waterway route, for through navigation has cost the Corps an estimated \$575,000 a year in recurring operation and maintenance expenses. Closure of the canal would greatly reduce these expenses and also eliminate the anticipated need for constructing expensive 65-foot-high fixed-span bridges by permitting the construction of considerably less costly bridges across the canal. This could save the Corps and North Carolina combined an additional \$27 million in construction costs. Closure of the route to through navigation is warranted, we believe, due to the relatively small amount of waterway traffic and the complete absence of commercial tonnage currently using the waterway. Closure of the canal would not eliminate its recreational benefits; it would be accessible to boats with trailers and to motorists.

CANAL HISTORY AND DESCRIPTION

In the early 1900s, considerable interest was expressed for the Federal Government to provide an inland toll-free waterway along the east coast. Both the Albemarle and Chesapeake Canal and the Dismal Swamp Canal were in operation between Norfolk, Virginia, and the Albemarle Sound, North Carolina; but they were privately owned, and tolls were being charged. In 1911, following a Corps study, the Federal Government purchased the Albemarle and Chesapeake Canal for \$500,000. The Government improved this route and removed the tolls, which greatly reduced the usage and the profitability of the Dismal Swamp Canal. To alleviate the financial hardship to the Dismal Swamp Canal owner and to insure continued operation of the route, the Government purchased this canal in 1929 for \$500,000. This ended years of frustration for its owner, but it gave the Federal Government two AIWW routes approximately paralleling each other. (See map, p. 21.)

The canal route is 59 miles long and extends from Deep Creek, Virginia; to South Mills, North Carolina. The project is authorized for a channel 9 feet deep and 50 feet wide. The Corps maintains the route to 6 feet rather than its authorized 9-foot depth because of a lack of traffic. At about halfway on the canal, a shallow feeder ditch connects the canal to the scenic and historic Lake Drummond. (See p. 21.) This ditch, about 3 1/2 miles in length, is only navigable by vessels which require a depth of 2 to 3 feet. The Corps also operates a dam and a spillway at Lake Drummond

to maintain a suitable water level in the canal for navigation and to control flooding, and provides a picnic area for motorists and boaters. (See photographs, pp. 22 and 23.)

The Norfolk District operates two locks, two drawbridges, one dam, and three spillways on the canal. The two Corps drawbridges are old, narrow, and create safety hazards. Thus the district has developed proposals for replacing the bridges. In addition, North Carolina plans to reroute U.S. Highway 17 and build a high-level fixed-span bridge over the canal at South Mills.

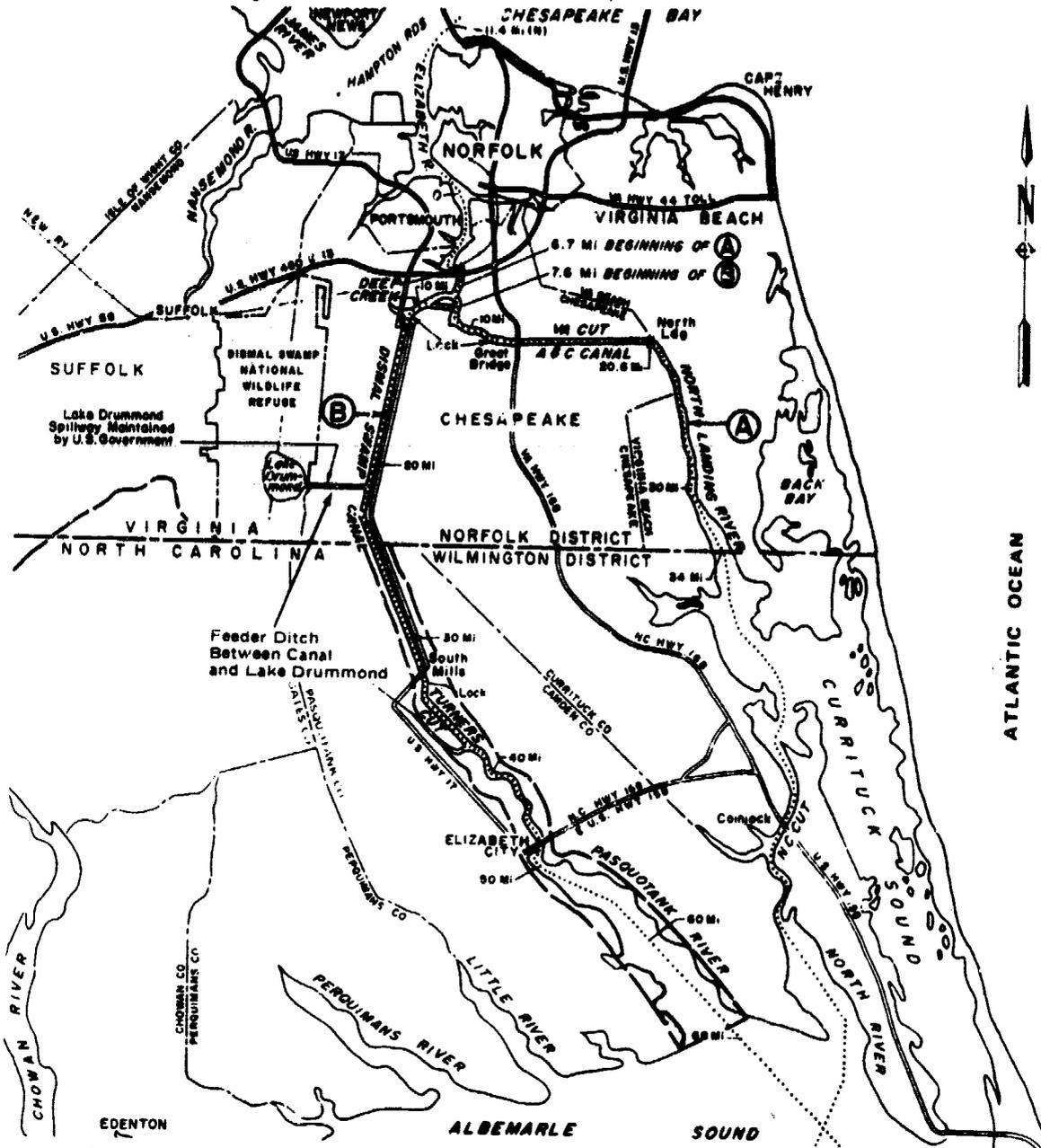
The Corps' policy is that a favorable benefit/cost ratio is necessary before a potential project is recommended for development or an existing project is fully maintained. The Corps, however, prepared five benefit/cost reports between 1958 and 1970, which showed a lack of economic justification for the canal. The reports showed the benefit/cost ratio never exceeded 0.3 to 1.0 and recommended that operation and maintenance costs be kept to a minimum consistent with the bare needs of navigation until such time as the Congress indicates that the canal operation should be discontinued. In 1970, however, the Corps changed its method of computing benefits for the canal, which resulted in a 1.7 to 1.0 benefit/cost ratio. This computation included benefits not previously considered, primarily "regional" benefits to merchants in the Elizabeth City, North Carolina area.

Except for short periods of time, the canal was operated 24 hours a day until 1950 when operations were reduced to a 16-hour day. The 16-hour operation continued until August 1976 when a drought resulted in a 7-month closure. During and after the drought, which occurred during our review, we discussed the limited waterway traffic with the Corps, and in March 1977 the Corps initiated 8-hour operations.

CANAL USE IS LIMITED TO A SMALL NUMBER OF RECREATIONAL CRAFT

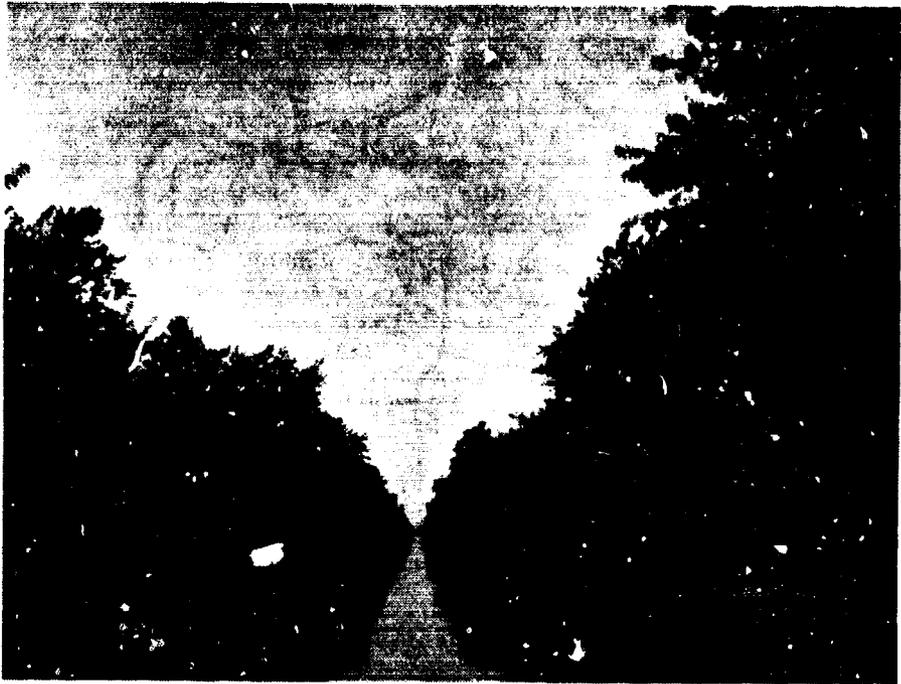
The primary use of the canal has been pleasure craft, and the percentage of pleasure craft has increased over the years. The table on page 24 demonstrates this and also shows the complete absence of commercial tonnage in recent years.

Source: Corps of Engineers



(A) ALBEMARLE AND CHESAPEAKE CANAL ROUTE

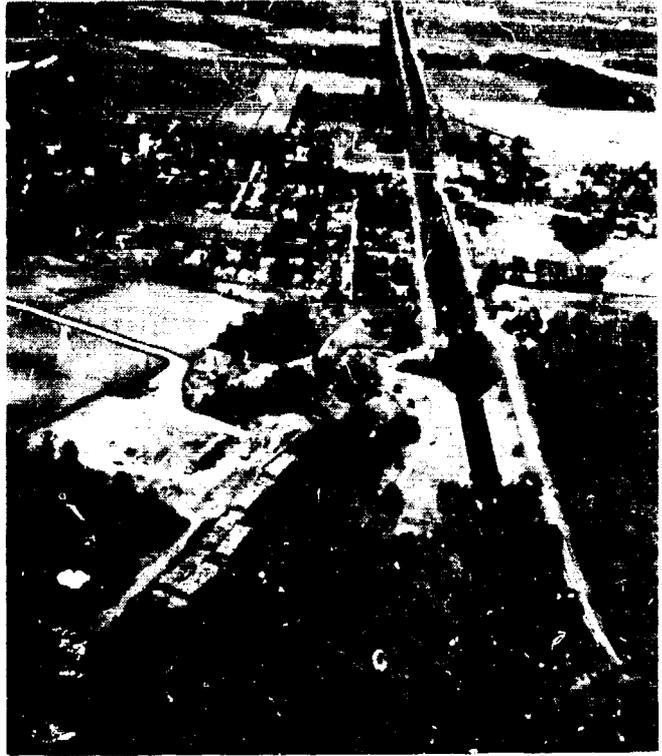
(B) DISMAL SWAMP CANAL ROUTE



VIEW OF DISMAL SWAMP CANAL



PICNIC AREA AT LAKE DRUMMOND DAM RESERVATION



AERIAL VIEW OF LOCK AND
BRIDGE ON DISMAL SWAMP
CANAL AT SOUTH MILLS,
NORTH CAROLINA



LAKE DRUMMOND DAM
AND SPILLWAY

DISMAL SWAMP CANAL

<u>Year</u>	<u>Private Vessel Trips</u>	<u>Government Vessels Trips (note a)</u>	<u>Commercial Vessels Trips</u>	<u>Total (note b)</u>	<u>Pleasure</u>	<u>Commercial Tonnage</u>
1960	2,318	56	144	2,518	92.1	0
1961	2,508	93	342	2,943	85.2	0
1962	2,306	69	68	2,143	93.6	0
1963	1,660	32	195	1,887	88.0	0
1964	1,859	49	136	2,044	90.7	500
1965	1,982	38	127	2,147	92.3	5,000
1966	2,098	80	81	2,259	92.9	5,271
1967	1,802	62	140	2,004	89.9	55
1968	2,120	82	106	2,308	91.9	5,306
1969	2,104	137	59	2,300	91.5	744
1970	2,091	92	70	2,253	92.8	0
1971	2,067	69	93	2,229	92.7	3,600
1972	2,395	73	263	2,731	87.7	0
1973	2,755	79	40	2,875	95.9	0
1974	2,749	59	66	2,874	95.7	0
1975	3,073	58	28	3,159	97.3	0
1976	1,367	38	13	1,405	97.3	0

a/Government vessels are mainly Corps vessels, many of which would not be needed if the canal were closed to through traffic.

b/Does not always present different craft. For example, the 3,104 trips listed for pleasure and commercial vessels in 1975 were made by 2,004 different boats.

c/Restricted operation due to water shortage.

d/Since 1971 the commercial craft has been empty barges.

The above information is based on traffic between the locks at Deep Creek and South Mills.

Compared with the Dismal Swamp Canal, the Albemarle and Chesapeake Canal carried 12,356 vessels in 1975 and 1.4 million tons of commerce. Thus the user preference for this route is apparent.

Dismal Swamp Canal use averages less than eight boats a day, with a seasonal low use of about 1.5 boats a day during winter months. The graph on page 26 shows, for the 20 months ended August 1976, the average daily vessel usage during each month and the highly seasonal use.

COSTS TO KEEP THE CANAL OPEN TO THROUGH NAVIGATION HAS BEEN ABOUT \$475,000 ANNUALLY

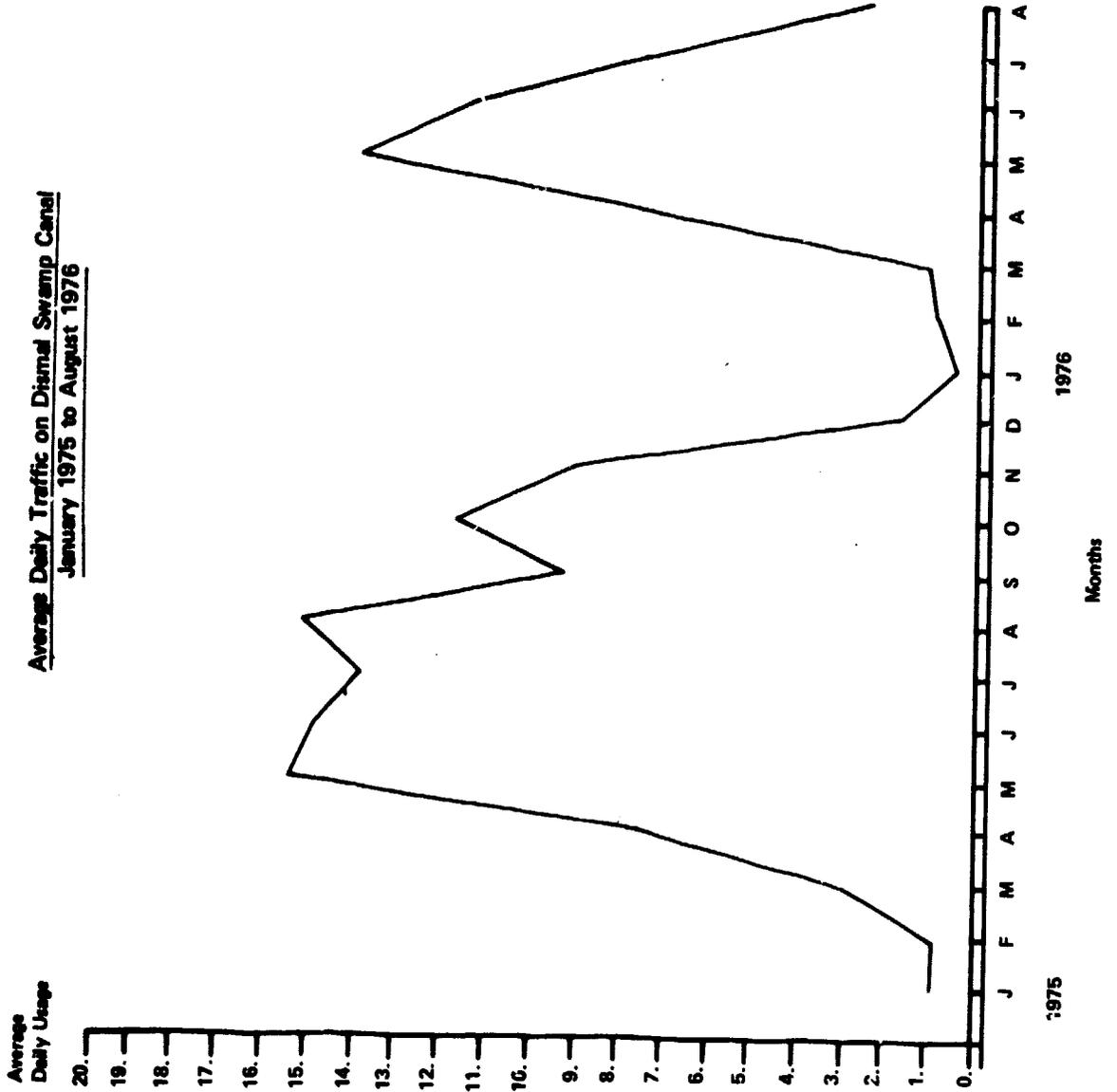
The normal 16-hour operation of the canal has cost the Corps \$575,000 annually for the last 3 years. These costs included salaries and benefits for the 17 personnel who operated the structures, dredging which occurs about every 2 years, rehabilitation of structures, and minor repairs. These costs do not include new construction. The Corps estimates that, if the canal were closed to through navigation, about \$100,000 ¹/ a year would be required to operate the spillways and public use area. (See p. 30.) Therefore the additional cost of the 16-hour operation has been about \$475,000 annually, which resulted in Corps' cost per boat averaging over \$153. Depending on the time of year, the cost has ranged from about \$100 to \$3,700 a boat. These conditions are illustrated in the table below.

Dismal Swamp Canal

<u>1975</u>	<u>Recreational</u>	<u>Commercial</u>	<u>Total</u>	<u>Average cost per boat trip</u>
January	27	1	28	\$1,710
February	16	7	23	2,082
March	65	2	67	715
April	218	1	219	219
May	467	11	478	100
June	445		445	108
July	423	1	424	113
August	466	1	467	103
September	276	1	277	173
October	358	2	360	133
November	265	4	269	178
December	<u>47</u>	-	<u>47</u>	1,019
Total	<u>3,073</u>	<u>31</u>	<u>3,104</u>	185
<u>1976</u>				
January	11	2	13	3,683
February	27	1	28	1,710
March	55	1	56	855
April	214	6	220	218
May	426	4	430	111
June	<u>337</u>	<u>2</u>	<u>339</u>	141
Total	<u>1,070</u>	<u>16</u>	<u>1,086</u>	265
	<u>4,143</u>	<u>47</u>	<u>4,190</u>	206

¹/The agency commented later that the total operation and maintenance costs would exceed \$100,000.

**Average Daily Traffic on Dismal Swamp Canal
January 1975 to August 1976**



During our fieldwork, which occurred during the closure of the canal due to drought conditions, we pointed out to the Norfolk District that 80 percent of the traffic used the canal during an 8-hour period. In January 1977 the Corps abolished 7 of its 17 employee positions for the canal, and when the canal reopened in March, an 8-hour, 7-day week operating period began. This action reduced the operating costs by \$140,000 annually. Therefore the additional annual operation and maintenance cost of the canal as a through route is now about \$335,000.

FUTURE BRIDGE REPLACEMENT COSTS MAY BE REDUCED

The Corps has studied the replacement of two bridges which cross the 50-foot-wide canal at Deep Creek, Virginia, and South Mills, North Carolina. Both bridges were constructed in 1934 with an estimated structural life of 40 years. In a September 1976 report, the Corps stated that the two bridges were in generally good condition but were substandard in width and weight capacity and that the narrow roadway widths cause serious safety hazards during peak traffic flow conditions.

The Norfolk District and North Atlantic Division Engineers recommended that the Deep Creek Bridge be replaced with a 65-foot-high, over 2,400-foot-long, fixed-span bridge at an estimated first cost of \$20.6 million. No action was recommended for the South Mills Bridge, but the report stated that citizen groups were emphatically against eliminating the existing structure.

In an August 12, 1977, public announcement, the Board of Engineers for Rivers and Harbors said that the traffic capacity at the Deep Creek Bridge would not be reached until the early 1980s and that the recommended bridge replacement plan was premature. The Board recommended that the Corps not replace the existing Bridge.

North Carolina is also planning to build a 65-foot-high fixed-span bridge over the Dismal Swamp Canal as part of a new U.S. Highway 17. A North Carolina Department of Transportation official estimated that the new bridge would cost about \$8 million, with construction to begin in 1981.

The total projected cost for the Deep Creek and the North Carolina high-level bridges is \$28.6 million. Although the Board of Engineers for Rivers and Harbors recommended that the Deep Creek Bridge not be replaced at this time, it did not rule out the possibility of replacement in the near future when traffic capacity is reached and the safety

hazards become a more serious problem. Closing the canal to through traffic would eliminate the need for such expensive structures and help low-level fixed-span bridges to be constructed. North Carolina and Corps officials estimated the total cost for these two low-level bridges at \$1.2 million. This could represent a potential savings of over \$27 million if the low-level bridges are constructed.

POSITIVE IMPACTS OF CLOSURE TO THROUGH TRAFFIC OUTWEIGH THE NEGATIVE IMPACTS

Closure of the canal to through traffic would not, in our opinion, have significant negative impacts. The following summarizes the pros and cons regarding closure.

Negative impacts

- Some recreational boaters--boaters who cannot or who do not trailer their craft--would not have access to the scenic canal.
- The alternate Albemarle and Chesapeake Canal route is 1 mile longer between the intersecting points of the 2 routes and is 20 miles longer for those going south to Elizabeth City, North Carolina.
- The Corps' latest benefit/cost study showed that a lumber company and a grain company would annually incur about \$16,000 each in additional expenses by not being able to use the canal for returning empty barges to the Elizabeth City area.
- According to an Elizabeth City Chamber of Commerce official, the profitability of one boat marina would be particularly damaged.
- There would no longer be an alternate route to the Albermarle and Chesapeake Canal users. However, most commercial vessels cannot use the Dismal Swamp Canal.

Positive or no impacts

- Closure to through traffic would save the Corps an estimated \$335,000 annually in operation and maintenance costs and could avoid \$27 million in construction expenditures by North Carolina and the Corps for high-level bridges over the canal.
- The scenic canal and Lake Drummond would remain accessible to those who trailer boats and to motorists

who use the picnic areas along U.S. Highway 17 which runs through the Great Dismal Swamp.

- The Albemarle and Chesapeake Canal is a wider, deeper and faster route and already carries most boat traffic along the Atlantic Intracoastal Waterway. It has the capacity to carry additional traffic; it is also scenic.
- An Elizabeth City Chamber of Commerce representative told us that the canal did not play an important role in the city's economy. As further indications of local economy interest, State and local officials were unwilling to help defray the canal's costs. Also it is conceivable that towns along the Albemarle and Chesapeake Canal would benefit economically comparable to any disbenefit that might be experienced by closure of the Dismal Swamp Canal.
- Opposition of local communities to the proposed 2,400-foot-long high-level bridges will be avoided by removing the need for such structures.
- Closure should lessen the drain on Lake Drummond caused by lock operation. Such operation contributes to the lowering of the water table, which is threatening the unique physical character and ecology of the Dismal Swamp. (Each lock opening drains 1.5 million gallons of water from the lake, or 3 million gallons for each vessel trip through the two locks.)
- Corps officials estimate that about \$100,000 a year would still be required to operate spillways for flood control and maintain the picnic area. (See pp. 25 and 30.)

CONCLUSIONS

The costs and other disadvantages of maintaining the Dismal Swamp Canal as a through waterway greatly outweigh its benefits, and there are few significant negative impacts that would result from closure.

RECOMMENDATIONS

We, therefore recommend that the Secretary of the Army direct the Corps of Engineers to (1) determine whether States or local communities would assume the costs to maintain the Dismal Swamp Canal for through navigation, (2) hold meetings to obtain public views regarding the closure of the

canal, and (3) determine the environmental impacts of such closure. We recommend also that, unless the results of these determinations clearly justify a different action, the Secretary direct the Corps to develop a legislative proposal to close the Dismal Swamp Canal to through navigation.

AGENCY COMMENTS

In an October 12, 1977, letter, the Department of the Army agreed that the goal of reducing costs by closing of lightly used waterways was desirable. The Army said that, on several occasions, attempts by the Norfolk District to close the Dismal Swamp Canal had met with political frustration.

For clarification, the Army said that the latest public meeting in 1970 showed overwhelming support for continued operation of the canal and that a 1974 Department of the Interior, Fish and Wildlife Service, study recommended continued operation for navigation and expansion of Corps public use facilities operated in conjunction with the canal. The public will be afforded the opportunity to present their views at the recommended public meetings.

The reasons for the Fish and Wildlife Service recommendation, which the Secretary of the Interior did not totally concur with, are addressed in our report. Also a Fish and Wildlife Service official stated in January 1977 that discontinuing operation of the bridges and locks on the Dismal Swamp Canal would be beneficial in the areas of water conservation and bank erosion and that the total volume of recreational traffic would not change.

The Army also stated that the total operation and maintenance costs required each year if the canal were closed would exceed the \$100,000 estimated on page 25 because some maintenance and repair would still be required for the locks, bridges, and public use facilities. The Army did not, however, estimate the total costs. The Army said that reductions of \$75,000 to \$90,000 in salaries would occur. Consequently, the total annual savings may be less than the \$335,000 mentioned on page 27.

CHAPTER 4

SCOPE OF REVIEW

We reviewed legislation, regulations, reports, studies, and various operating and financial records pertaining to the operation and maintenance of bridges, locks, and dams on, or across Atlantic coast inland waterways. We visited or contacted officials of the following organizations during our review.

U.S. Army Corps of Engineers:

Chief of Engineers, Washington, D.C.
District Engineer, Norfolk, Virginia.
District Engineer, Wilmington, North Carolina.

Department of Transportation:

U.S. Coast Guard Headquarters, Washington, D.C.
Fifth Coast Guard District, Portsmouth, Virginia.

State Highway/Transportation Departments:

Florida, Georgia, North Carolina, South Carolina,
and Virginia.

We contacted a railroad concerning its bridges and several local officials, business, and waterway carriers concerning use and importance of Atlantic coast inland waterways to commerce.

VESSEL USE OF DRAWBRIDGES INCLUDED IN REVIEW

Owner	Bridge name	Location	24-hour day	Average vessel traffic during		Commercial	Commercial
				6:00 p.m. to 6:00 a.m.	10:00 p.m. to 6:00 a.m.		
			Recreation	Recreation	Recreation	Commercial	Commercial
Florida (note a)	Ortega River	Duval County	42.8	8.5	2.1	0.2	0.0
	Edison	Lee County	4.4	1.1	0.2	0.0	0.0
	East Draw, 79th St.	Dade County	16.3	1.0	0.1	1.1	0.3
	Inulan Rocks	Pinellas County	5.2	0.5	0.0	0.0	0.0
	Sunrise	Broward County	51.7	10.6	3.0	1.5	0.6
	North Bridge	Volusia County	39.8	1.1	0.2	4.6	0.2
	B. R. McCormick	Duval County	15.5	1.6	0.1	0.7	0.0
	Parker	Palm Beach County	15.7	0.7	0.4	0.4	0.2
	Mallandale	Broward County	8.0	0.3	0.0	0.3	0.3
	Crescent Beach	St. Johns County	11.2	1.3	0.2	0.2	0.1
	York River	Gloucester County	0.7	b/0.03			b/0.02
	Virginia (note a)	James River	Isle of Wight County	4.3	1.5		0.9
Nansemond		Suffolk, Va.	0.8	0.3		0.04	0.03
Kings Highway		Suffolk, Va.	1.8	0.4			
Alligator River		Tyrell County	18.7	Not obtained	0.2		1.0
Atlantic Beach		Carteret County	27.8	Not obtained	0.3		0.9
Sears Landing		Pender County	18.2	Not obtained	0.1		0.8
Wrightsville Beach		New Hanover County	16.4	Not obtained	0.4		1.0
Ibiden Beach		Brunswick County	16.9	Not obtained	0.1		1.6
Ocean Isle		Brunswick County	16.4	Not obtained	0.1		1.3
Sunset Beach		Brunswick County	20.7	Not obtained	0.1		1.6
Resufort Channel		Carteret County	10.2	Not obtained	0.0		2.3
Corps - Wilmington District (note d)		Coinjock	AIWW	20.1	2.8	1.2	0.9
	Core Creek	AIWW	29.5	3.6	1.9	1.9	1.0
	Fairfield	AIWW	19.5	1.8	0.4	0.4	0.2
	Ibuckon	AIWW	28.4	3.7	1.0	1.0	0.5
	Wilkinson Creek	AIWW	19.7	2.5	1.0	0.5	0.2
Corps - Norfolk District (note e)	Great Bridge	AIWW	24.3	2.3	0.2	2.5	1.3
	North Landing	AIWW	22.2	1.5	0.2	2.5	1.4

a/Calendar year 1976 use.
 b/Combined recreational and commercial craft.
 c/October 1975 through September 1976 use.
 d/Fiscal year 1976 use.
 e/Calendar year 1975 use.



**DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310**

12 OCT 1977

Mr. Henry Eschwege
Director, Community and Economic
Development Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

This is in reply to your letter to the Secretary of Defense dated 20 July 1977, regarding your draft report on "Opportunities for Large Savings to Taxpayers by Altering Some Inland Waterway Operations," OSD Case #4581-A.

The goal of reducing costs by lessening hours of operations of locks and bridges or closing of lightly-used waterways is desirable. Corps districts have already taken steps to reduce hours of operation during low demand periods and thereby reduce costs and expenditure of limited manpower resources. On several occasions attempts by the Norfolk District to close the Dismal Swamp Canal have met with political frustration.

Any widespread reduction in service must be preceded by a careful and well-documented analysis on a case-by-case basis in order to cope with the anticipated protests by commercial and private interests. Cost savings will have to be readily identified in order to overcome the consequential public pressures.

Attached as Inclosure 1 are clarifications to statements included in the draft GAO report. The opportunity to review this report is appreciated.

Sincerely,

Inclosure [See GAO note.] Charles R. Ford
Acting Assistant Secretary of the Army
(Civil Works)



GAO note: The enclosure is not included here but was considered in preparing this report.



OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

ASSISTANT SECRETARY
FOR ADMINISTRATION

September 20, 1977

Mr. Henry Eschwege
Director
Community and Economic Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

We have enclosed two copies of our reply to the General Accounting Office draft report "Opportunities for Large Savings to Taxpayers by Altering Some Inland Waterway Operations." Please let us know if we can assist you further.

Sincerely,

William P. Davis
for Edward W. Scott, Jr.

Enclosures

DEPARTMENT OF TRANSPORTATION REPLY
TO
GAO DRAFT OF A PROPOSED REPORT
ON
OPPORTUNITIES FOR LARGE SAVINGS TO TAXPAYERS
BY ALTERING SOME INLAND WATERWAY OPERATIONS
SUMMARY OF GAO FINDINGS AND RECOMMENDATIONS

Many Federal, State, and private drawbridges or locks are operated 24 hours a day despite little or no boat traffic during predictable periods. Operations could be reduced substantially without having a serious impact on essential navigation needs, saving the taxpayers millions of dollars each year. Further, the Corps of Engineers operation of the Dismal Swamp Canal -- an expensive alternate route -- appears unwarranted.

[See GAO note, p. 7.]

Further, the Report recommends that the Secretary of the Army direct the Corps of Engineers to (1) determine whether States or local communities would assume the cost to maintain the Dismal Swamp Canal for through navigation, (2) hold meetings to obtain the public views regarding closure of the Canal, and (3) determine the environmental impacts of such closure. The Report also recommends that unless the results of these determinations clearly justify a different action, the Secretary direct the Corps to develop a legislative proposal to close the Dismal Swamp Canal to through navigation.

SUMMARY OF DEPARTMENT OF TRANSPORTATION (COAST GUARD) POSITION

The Coast Guard agrees that there may be some bridges whose owners operate on a 24-hour a day basis when there is insufficient navigation to economically justify the labor costs. Further, the Coast Guard agrees that there may be situations where the owners may not be aware that regulations may be promulgated to relieve the owners of part or all of the legal burden to open the bridge on reasonable signal.

[See GAO note, p. 7.]

Further, it implies the categorical assumption that reduced operating schedules for economic benefit of bridge owners will provide for the reasonable needs of navigation and further implies abridgement of the public right of navigation on the navigable waters of the United States for the economic benefit of bridge owners is a duty of the Coast Guard contrary to the mandate of Congress to preserve the public right of navigation. To accept the validity of seeking economic benefit on the basis of saved labor costs then begs the question of seeking economic benefit to bridge owners who fail to properly maintain their bridge structures and machinery as required by law and seek regulations to reduce further deterioration through reduced operation of the drawbridge. None of these are acceptable. All bridges across navigable waters of the United States are obstructions to navigation tolerated only so long as they provide for needs of land transportation. The acceptance of the cost burden of maintenance and operation of drawbridges is implicit in the approval of the location and plans of drawbridges. The burden of seeking relief from these legal obligations rests with the bridge owner not the Coast Guard.

POSITION STATEMENT

The Report as it pertains to drawbridges is based upon several isolated interviews with Coast Guard Bridge Administration staff members made in the context of drawbridge regulatory processing procedures arising out of the review of the questionable need for maintaining the Dismal Swamp Canal as a navigable waterway. The usual entry and exit interviews were not conducted nor were any other interviews conducted concerning the function in the overall. The Report is most deficient in depth and scope. The Report further used data and information from a waterway system of relatively minor importance for navigation and applied the data and information as representative on a national basis. The Report is further deficient in that it relies on the premise that the drawbridge regulatory function is based upon precedents, tradition, and practice. Accordingly, it assumes that more favorable treatment to drawbridge owners and land transportation may be given as a matter of administrative discretion. The administration of function is not based on precedents, tradition or practice. It is based upon the mandates of Congress and case law as annunciated by the Federal judiciary. The Coast Guard has very limited discretion and is required to preserve the paramount right of navigation on the navigable waters of the United States. A strong bias in support of the public right of navigation is mandated by law.

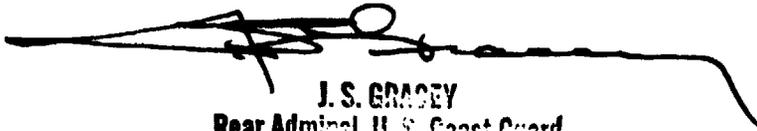
[See GAO note, p. 7.]

We cannot accept the generalization implied that drawbridge owners need be informed that special regulations are available to reduce manning costs. The fact that 53% of the drawbridges are now covered by such regulations clearly shows that the States, counties, cities, and railroad companies are well aware of the regulatory procedure. Further, the regulatory process is a continuous day to day activity. The Coast Guard processes new special regulations or amendments to existing special regulations at the rate of about 80 annually (84 in 1976). It has been our observation that most State Highway Departments (the predominant owners) continuously review the operation requirements for their bridges and as staff and resources are available requests for reduced operation are submitted. The State of Florida has taken a systematic approach to this issue over the past 10 years. It should also

be pointed out that bridge owners may not wish to reduce operation costs for a variety of totally unrelated reasons such as providing employment, prevention of vandalism (a major problem on unmanned drawbridges), and political considerations.

When drawbridge owners apply for approval of the plans and location of a proposed drawbridge it is implicit that the owner accepts the responsibility for added operating costs in consideration of the approval. This is a critical element of inducement for the approval in lieu of a much more costly high-level fixed bridge which would otherwise be required. In view of the mandate of Congress and case law which requires the Coast Guard to preserve the public right of navigation and that all bridges across the navigable waters of the United States provide for the reasonable needs of navigation, it is at the very least most improper and inappropriate for the Coast Guard to actively seek ways and means to reduce drawbridge operating hours and restrict navigation to lesser availability of the waterway on the basis of economic benefit to drawbridge owners and land transportation. Further, once the principle is established that economic benefit to drawbridge owners is a valid basis for reduced operation, it necessarily follows that drawbridge owners who fail to maintain the bridge structure and machinery properly, as required by law, may also seek economic benefits through regulation authorizing reduced operation of the drawbridge resulting in savings of maintenance and repair costs.

No corrective action is contemplated, as recommended, to develop additional criteria that will be used in evaluating requests for reducing bridge operating hours. The present regulatory procedures are considered the proper procedures pursuant to the Administrative Procedure Act which provides for full public participation in any proposed rule making, both in writing and by public hearing if necessary. The determination of the reasonable needs of navigation is not amenable to quantitative criteria of amounts of traffic, the ability of navigation to change operations or the cost benefits or savings to drawbridge owners. Further, in view of the law which establishes the paramount right of navigation bias toward navigation is mandated.
(See GAO note below)



J. S. GRACEY
Rear Admiral, U. S. Coast Guard
Chief of Staff

GAO note: Deleted material concerns changes which have been made in the report.



STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR
RALEIGH 27611

JAMES B. HUNT, JR.
GOVERNOR

September 13, 1977

Dear Mr. Eschwege:

Thank you for the opportunity to review Chapter Three of your proposed draft report to Congress concerning a proposal to close the Dismal Swamp Canal. I apologize for the delay in responding, but the report raised serious questions that we wanted to fully explore.

North Carolina supports in principle your recommendations. The net economic and environmental advantages to the State from this proposal would apparently outweigh the disadvantages. However, I am concerned that the citizens and other interests in the affected area should have an adequate voice in proposals to close the Dismal Swamp Canal. Therefore, I recommend that the report contain a provision for local hearings on the matter and for inclusion of the findings in final recommendations.

In addition, the proposal should also consider construction and maintenance of small boat launching facilities adequate to satisfy the needs of recreational users and the possibility of continued maintenance of the channel to depths adequate for trailerable boats.

Finally, the environmental effects of the proposed canal closure and possible mitigating measures should be addressed in an environmental assessment or statement.

I hope you will incorporate these comments in your final report.

My warmest personal regards.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to be "J. B. Hunt".

The Honorable Henry Eschwege, Director
Community & Economic Development Division
United States General Accounting Office
Washington, D.C. 20548

**COMMONWEALTH of VIRGINIA***Office of the Governor**Richmond 23219***Earl J. Shiflet**
Secretary of Commerce and Resources

August 9, 1977

Mr. Henry Eschwege
Director
United States General Accounting Office
Community and Economic Development
Division
Washington, D. C. 20548

Dear Mr. Eschwege:

Governor Godwin has asked me to respond to your letter of July 20, 1977, and enclosed copy of the draft of Chapter 3 of the proposed report entitled "Opportunities for Large Savings to Taxpayers by Altering Some Inland Waterway Operations."

The Governor has no information contrary to that developed by the General Accounting Office staff with respect to the volume of through boat traffic currently using the Dismal Swamp Canal, or the cost to the Corps of Engineers of maintaining and operating the Canal for through traffic. Furthermore, it is recognized that operation of the locks contributes to the lowering of the water table which is threatening the unique physical character and ecology of the Dismal Swamp.

The classified nature of the draft document enclosed with your letter, and the injunction that it be safeguarded against publication or non-official disclosure of any information contained therein, preclude our obtaining input from citizen-users of the waterway that might be weighed by the Governor in formulating a policy position with respect to the implied recommendation that the Canal facilities be closed to through traffic. Therefore, while the Governor does not disagree with the facts set forth in the draft of Chapter 3 of the proposed report,

Mr. Henry Eschwege
August 9, 1977
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he is not prepared at this time to indicate either support of, or opposition to, any recommendations to the Congress that might grow out of this proposed report with respect to the continued operation of the Dismal Swamp Canal.

Sincerely yours,


Earl J. Spiflet

EJS/lc

cc: The Honorable Mills E. Godwin, Jr.
Mr. James McInteer

PRINCIPAL OFFICIALS RESPONSIBLE FOR
THE ACTIVITIES DISCUSSED IN THIS REPORT

Tenure of office

From To

DEPARTMENT OF DEFENSE

SECRETARY OF DEFENSE:

Harold Brown	Jan. 1977	Present
Donald H. Rumsfeld	Nov. 1975	Jan. 1977
James Schlesinger	June 1973	Nov. 1975
W.P. Clements, Jr. (acting)	May 1973	June 1973
Elliott L. Richardson	Jan. 1973	Apr. 1973
Melvin Laird	Jan. 1969	Jan. 1973

DEPARTMENT OF THE ARMY

SECRETARY OF THE ARMY:

Clifford L. Alexander	Feb. 1977	Present
Martin R. Hoffman	Aug. 1975	Feb. 1977
Howard H. Calloway	May 1973	July 1975
Robert F. Froehlke	July 1971	May 1973
Stanley R. Resor	July 1965	June 1971

ASSISTANT SECRETARY OF THE ARMY
FOR CIVIL WORKS:

Charles R. Ford (acting)	Feb. 1977	Present
Victor V. Veysey	Mar. 1975	Jan. 1977

CHIEF OF ENGINEERS:

Lt. Gen. John Morris	July 1976	Present
Lt. Gen. W.C. Gribble, Jr.	Aug. 1973	June 1976
Lt. Gen. F.J. Clarke	Aug. 1969	July 1973

DEPARTMENT OF TRANSPORTATION

SECRETARY OF TRANSPORTATION:

Brock Adams	Jan. 1977	Present
William T. Coleman, Jr.	Mar. 1975	Jan. 1977
John W. Barnum (acting)	Feb. 1975	Mar. 1975
Claude S. Brinegar	Feb. 1973	Feb. 1975
John A. Volpe	Jan. 1969	Feb. 1973

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